

1           1.       A method comprising:  
2                   determining for a channel, channel prediction terms from both first  
3 channel estimation terms derived from first common pilot channel signal and second  
4 channel estimation terms derived from second common pilot channel signal; and  
5                   enabling control over future transmission patterns of the channel using the  
6 channel prediction terms.

1           2.       The method of claim 1, including predicting a future state of the channel at  
2 a specified time based on the channel prediction terms.

1           3.       The method of claim 2, including storing the first and second channel  
2 estimation terms in order to determine the channel prediction terms in response to the  
3 first and second common pilot channel signals, respectively.

1           4.       The method of claim 3, including adaptively calculating the channel  
2 prediction terms from the first and second channel estimation terms in one or more  
3 iterations.

1           5.       The method of claim 4, wherein adaptively calculating includes:  
2                   receiving antenna transmission characteristics associated with one or more  
3 antennas of a plurality of antennas in order to controllably adjust the future transmission  
4 patterns of the channel; and  
5                   selecting at least one antenna transmission characteristic from the antenna  
6 transmission characteristics based on the channel prediction terms.

1           6.       The method of claim 4, wherein adaptively calculating includes receiving  
2 one or more weighted values associated with one or more antennas of a plurality of  
3 antennas where said first common pilot channel signal is from a first antenna of the  
4 plurality of antennas and said second common pilot channel signal is from a second  
5 antenna of the plurality of antennas.

1           7.       The method of claim 5, including using a feedback signal based on the  
2 channel prediction terms to control the future transmission patterns of the channel  
3 according to the future state of the channel at the specified time.

1           8.       The method of claim 6, including:  
2                   selecting at least one weighted value from the one or more weighted  
3 values based on the channel prediction terms;  
4                   providing the at least one weighted value to the first and second antennas  
5 to accurately assess the future state of the channel at the specified time; and  
6                   separating first and second channel propagation paths associated with the  
7 first and second antennas based on the first and second common pilot channel signals.

1           9.       The method of claim 8, including estimating phase and magnitude of the  
2 channel for the first and second channel propagation paths to derive the first and second  
3 channel estimation terms.

1           10.      The method of claim 4, wherein the first channel estimation terms  
2 correspond to a channel estimation term calculated in at least one iteration prior to a  
3 current iteration of the one or more iterations.

1           11.     The method of claim 10, wherein the second channel estimation terms  
2 correspond to a channel estimation term calculated in the current iteration of the one or  
3 more iterations.

1           12.     The method of claim 6, including operating the first and second antennas  
2 of the plurality of antennas in a closed loop transmit diversity mode.

1           13.     The method of claim 12, including providing feedback, including the at  
2 least one weighted value of the one or more weighted values, to the first and second  
3 antennas of the plurality of antennas.

1           14.     The method of claim 13, including controlling at the specified time a  
2 transmission pattern over the channel from at least one antenna of the first and second  
3 antennas to match the future state of the channel and substantially reduce the effective  
4 loop delay in the closed loop transmit diversity mode.

1           15.     An apparatus comprising:  
2                   a communication interface; and  
3                   a processor communicatively coupled to the communication interface, the  
4 processor to determine for a channel, channel prediction terms from both first channel  
5 estimation terms derived from first common pilot channel signal and second channel  
6 estimation terms derived from second common pilot channel signal and to enable control  
7 over future transmission patterns of the channel using the channel prediction terms.

1           16.     The apparatus of claim 15, wherein the processor predicts a future state of  
2 the channel at a specified time based on the channel prediction terms.

1           17.     The apparatus of claim 15, further comprising:  
2                     a storage coupled to the processor to store the first and second channel  
3 estimation terms in order to determine the channel prediction terms in response to the  
4 first and second common pilot channel signals, respectively.

1           18.     The apparatus of claim 17, wherein the processor adaptively calculates the  
2 channel prediction terms from the first and second channel estimation terms in one or  
3 more iterations.

1           19.     The apparatus of claim 18, wherein the processor:  
2                     receives antenna transmission characteristics associated with one or more  
3 antennas of a plurality of antennas in order to controllably adjust the future transmission  
4 patterns to the channel; and  
5                     selects at least one antenna transmission characteristic from the antenna  
6 transmission characteristics based on the channel prediction terms.

1           20.     The apparatus of claim 19, wherein the processor:  
2                     provides a feedback signal based on the channel prediction terms to  
3 control the future transmission patterns of a transmitter according to the future state of the  
4 channel at the specified time.

1           21.     The apparatus of claim 18, wherein the processor:  
2                     receives one or more weighted values associated with one or more  
3 antennas of a plurality of antennas, said first common pilot channel signal is from a first  
4 antenna of the plurality of antennas and said second common pilot channel signal is from

5 a second antenna of the plurality of antennas to operate first and second antennas in a  
6 closed loop transmit diversity mode;  
7 provides feedback having the at least one weighted value of the one or  
8 more weighted values to the first and second antennas; and  
9 controls at the specified time the future transmission patterns over the  
10 channel from at least the first and second antennas of the plurality of antennas.

1 22. An article comprising a medium storing instructions that enable a  
2 processor-based system to:  
3 determine for a channel, channel prediction terms from both first channel  
4 estimation terms derived from first common pilot channel signal and second channel  
5 estimation terms derived from second common pilot channel signal; and  
6 enable control of future transmission patterns of the channel using the  
7 channel prediction terms.

1 23. The article of claim 22, further storing instructions that enable the  
2 processor-based system to predict a future state of the channel at a specified time based  
3 on the channel prediction terms.

1 24. The article of claim 23, further storing instructions that enable the  
2 processor-based system to store the first and second channel estimation terms in order to  
3 determine the channel prediction terms in response to the first and second common pilot  
4 channel signals, respectively.

1 25. The article of claim 24, further storing instructions that enable the  
2 processor-based system to:

3                   adaptively calculate the channel prediction terms from the first and second  
4 channel estimation terms in one or more iterations; and  
5                   receive antenna transmission characteristics associated with one or more  
6 antennas of a plurality of antennas in order to controllably adjust the future transmission  
7 patterns of the channel; and  
8                   select at least one antenna transmission characteristic from the antenna  
9 transmission characteristics based on the channel prediction terms.

1           26.    The article of claim 25, further storing instructions that enable the  
2 processor-based system to:  
3                   receive one or more weighted values associated with one or more antennas  
4 of a plurality of antennas, said first common pilot channel signal is from a first antenna of  
5 the plurality of antennas and said second common pilot channel signal is from a second  
6 antenna of the plurality of antennas;  
7                   select at least one weighted value from the one or more weighted values  
8 based on the channel prediction terms;  
9                   provide feedback having the at least one weighted value of the one or  
10 more weighted values to the first and second antennas of the plurality of antennas; and  
11                   control at the specified time a transmission pattern over the channel from  
12 at least one antenna of the first and second antennas.

1           27.    A wireless device comprising:  
2                   a communication interface;  
3                   a processor coupled to the communication interface; and  
4                   a storage coupled to the processor, said storage storing instructions to:

5                   determine for a traffic channel directed to the communication  
6 interface, channel prediction terms from both first channel estimation terms derived from  
7 first common pilot channel signal and second channel estimation terms derived from  
8 second common pilot channel signal,  
9                   predict a future state of the traffic channel at a specified time based  
10 on the channel prediction terms, and  
11                   control future transmission patterns using the future state of the  
12 traffic channel at the specified time.

1           28.    The wireless device of claim 27 comprises a transceiver adapted to  
2 communicate with a base transceiver in a closed loop transmit diversity mode.

1           29.    A mobile transceiver comprising:  
2                   a communication interface;  
3                   a processor coupled to the communication interface; and  
4                   a storage coupled to the processor, said storage storing instructions to:  
5                   determine for a traffic channel directed to the communication  
6 interface, channel prediction terms based on channel estimation terms derived from  
7 common pilot channel signals of at least two antennas,  
8                   in response to the common pilot channel signals, provide feedback  
9 information over a feedback channel to predict a future state of the traffic channel at a  
10 specified time, and  
11                   control future transmission patterns over the at least two antennas  
12 using the future state of the traffic channel at the specified time.

- 1           30.    The mobile transceiver of claim 29 comprises one or more antennas  
2 coupled to the communication interface, said one or more antennas adapted to  
3 communicate with a base station in a closed loop transmit diversity mode.